COMMITMENT & INTEGRITY
DRIVE RESULTS

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Via Electronic Mail and UPS

August 7, 2019

David Turin
U.S. Environmental Protection Agency
5 Post Office Square – Suite 100
Mail Code: OES04-3
Boston, MA 02109-3912

Re: Hull WWTF Capacity, Management, Operation and Maintenance ("CMOM") Program Assessment
Town of Hull, MA Administrative Order on Consent, Docket No. CWA-01-AO-16-09

Dear Mr. Turin:

As identified in the Administrative Order on Consent (AOC), Woodard & Curran, on behalf of the Town of Hull is hereby submitting the CMOM Program Self-Assessment Checklist for your review, comment and/or approval. Woodard & Curran began operation and maintenance of the Hull Wastewater Treatment Facility (WWTF) on April 1, 2015.

Sincerely,

WOODARD & CURRAN

Frank J. Cavaleri
Senior Principal

FJC/le

Enclosures: CMOM Program Self-Assessment Checklist

cc: David Burns, MassDEP Southeast Regional Office
Philip Lemnios, Manager, Town of Hull
John Struzziery, Director of Wastewater Operations, Town of Hull
Carol O'Connor, Town of Hull Sewer Department
Rob Scott, W&C
Aram Varjabedian, W&C

PN: 217319.00

HULL MA, WWTF CAPACITY MANAGEMENT OPERATION & MAINTENANCE PROGRAM ASSESSMENT

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woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

217319.00
Town of Hull, MA
July 2019

Table of Contents

APPENDICES

1. WASTEWATER COLLECTION SYSTEM CMOM PROGRAM SELF-ASSESSMENT CHECKLIST

Attachment
United States Environmental Protection Agency, EPA New England

Wastewater Collection System CMOM Program Self-Assessment Checklist Jul 2019

Name of your system Hull Water Pollution Control Facility Date July 31, 2019

Put an "A" in the final column for an issue you intend to address with future action, or leave blank if you have evaluated your program as sufficient.

I. General Information – Collection System Description

I	Question	Response	*Act
1	How many people are served by your wastewater collection system?	According to the 2010 U.S. Census report, the Town of Hull has 10,293 people served and in Hingham and Cohasset, approximately 786 people are served. Peddocks Island, part of the Boston Harbor Islands State Park, also discharges small flow to the Hull Sewer System (<100 users). Combined there is a total service population of about 11,079 – (~15,000 during summer season).	

* Put an "A" in the final column if this is an issue you intend to address with future action.

<table>
<tr>
<td>2</td>
<td>What is the number of service connections to your collection system? How many:
Manholes? Pump stations?
Feet (or miles) of sewer? Force mains?
Siphons?</td>
<td>Hull has 4,742 service connections (including 4,520 from Hull and 262 from Hingham and Cohasset). There are approximately 1,240 manholes and 210,000 linear feet (40 miles) of gravity sewer (ranging in diameter from 4” to 36”). About 20,000 feet of low-pressure sewer serves 175 homes with Town owned grinder pumps, with approximately an additional 33 resident owned grinder pumps. Seven pumping stations ranging in size from 200 gpm to about 1,700 gpm with a total length of force main approximately equal to 14,000 feet (See Table below for summary of design capacity of each station).

A four-barrel siphon consisting of 1-10", 2-16", and 1-18", 60 feet long was constructed along the interceptor to allow for placement of a 48" drainage culvert under the 36" interceptor. There is also a 2-barrel lagoon-crossing located off Fitzpatrick Way in front of the Hull Yacht Club.

<table>
<tr><th>Name</th><th>Location</th><th>Generator</th><th>Original Design Capacity (gpm)</th><th>Approx. Age (years)</th><th>Forcemain Size/Length</th></tr>
<tr><td>L.S. A</td><td>Valley Beach Rd.</td><td>No*</td><td>200</td><td>35</td><td>4”/840 ft.</td></tr>
<tr><td>P.S. 1</td><td>Atlantic Ave.</td><td>Yes</td><td>450</td><td>38</td><td>8”/2,050 ft.</td></tr>
<tr><td>P.S. 3</td><td>George Washington Blvd.</td><td>Yes</td><td>1700</td><td>38</td><td>14”/4,625 ft.</td></tr>
<tr><td>P.S. 4</td><td>Marginal Rd.</td><td>Yes</td><td>800</td><td>38</td><td>8”/1,000 ft.</td></tr>
<tr><td>P.S. 5</td><td>Draper Ave.</td><td>Yes</td><td>1600</td><td>38</td><td>14”/530 ft.</td></tr>
<tr><td>P.S. 6</td><td>L St. Playground</td><td>Yes</td><td>670</td><td>28</td><td>6”/60 ft.</td></tr>
<tr><td>P.S. 9</td><td>Main St. High School</td><td>Yes</td><td>650</td><td>38</td><td>10”/5,030 ft.</td></tr>
<tr><td colspan="6">*Transfer Switch, portable generator connection and portable generator are available.</td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>What is the age of your system (e.g., 30% over 30 years, 20% over 50 years, etc.)?</td>
<td>Significant portions of the collection system date back to the turn of the century. The system is a “separate” sanitary sewerage system, but some sewers are documented back to the 1860’s. Over 50% of the collection system has been constructed since 1977, making the average age of the collection system over 40+ years old.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>What type(s) of collection system map is/are available and what percent of the system is mapped by each method (e.g., paper only, paper scanned into electronic, digitized, interactive GIS, etc.)? When was the map(s) last updated?</td>
<td>In 2017, an asset management plan was developed based on GIS mapping of the sewer collection system including force mains and pump stations. A DEP Water Infrastructure Assessment Grant was received to utilize utility cloud as the GIS based asset management system. In 2018, DEP provided a separate technical assistance grant to update and map community sewer systems for which Hull was included. Since that time, Utility Cloud continues to be used and enhanced to include work orders, digitized service connection cards, manhole inspections, and sewer data</td>
<td></td>
</tr>
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		based on CCTV data. The Town's GIS will also be updated during the upcoming SSES efforts to be completed in the Spring of 2020. Updating of the GIS data is a daily iterative process as the Town is using Utility Cloud to manage asset data during field efforts conducted by O&M staff. Utility Cloud and ESRI ArcGIS continually updated as infrastructure repairs, additions, connectivity, and other information is understood. This effort has allowed the Town to move away from paper mapping and tracking.	
5	If you have a systematic numbering and identification method/system established to identify sewer system manhole, sewer lines, and other items (pump stations, etc.), please describe.	As Utility Cloud/GIS is updated using record drawings and current field verification, the numbering convention will be maintained and updated.	
6	Are "as-built" plans (record drawings) or maps available and used by field crews in the office and in the field?	Hull has "tie cards" for approximately 3,263 of the 4,520 Hull connections. For gravity sewer lines, forcemains and pump stations, there are GIS locations, available through Utility Cloud. There are paper drawings for many sewer projects available at the wastewater facility, and these are utilized or referenced by field crews on as needed basis. All available tie cards have been scanned and linked to Utility Cloud for use by field crews. Existing record drawings and new drawings and information are being added to Utility Cloud. The remaining 1,257 sewer-tie cards will be added if/when field data becomes available.	
7	Describe the type of asset management (AM) system you use (e.g. card catalog, spreadsheets, AM software program, etc.)	The current asset management system utilizes several technology tools; including Utility Cloud, DoForms, SEMS Technologies CMMS, and the ESRI ArcGIS system combined with Excel spreadsheets (inventories, calculations). We continue to upgrade and utilize Utility Cloud with the goal that it will be the main CMMS/GIS tool for managing all of the collection system assets. Using Utility Cloud (a Cloud-based CMMS system) will allow for both Town and Contract Operators to view, update, and track, asset information. Through the use of a risk-based asset management approach the Town has successfully funded three SRF planning studies and several major collection system and plant repair/upgrade projects.	

II. Continuing Sewer Assessment Plan

II	Question	Response	*Act
1	Under what conditions, if any, does the collection system overflow? Does it overflow during wet and/or dry weather? Has your system had problems with: □ hydraulic issues, □ debris, □ roots, □ Fats, Oils & Grease (FOG), □ vandalism blockages resulting in manhole overflows, □ basement backups,	Collection system overflows occur rarely during wet weather events, and the system does not typically experience overflows during dry weather. The collection system overflows however, typically as a result of wipes and debris, pipe grease blockages and root intrusion. However, the hydraulic limitations in the collection system and the WWTP are a concern only during extreme flow events or infrastructure failures. **Pump Station losses** - there have been no pump station	

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	□ other (specify)? Describe your system's history of structural collapses, and PS or force main failures.	losses that have caused sewer overflows in the past few years, except for the forcemain issues discussed below. **Structural collapses** – some corrosion/deterioration of mostly vitrified clay and asbestos cement sewers and reinforced concrete pipe and manholes have occurred in the past causing structural defects that have been included in the Asset Management Plan. **Forcemain failures** – The forcemain for PS 9 corroded and was replaced in 2011 with a new HDPE Forcemain. The forcemain for PS 4 had a break and required repair in early 2014 and recently again in 2019. This forcemain has failed multiple times over the years. The manhole and reinforced concrete pipe ("main interceptor") where the forcemain for PS 3 discharges, collapsed in 2002/2003 and required an emergency repair. 15 feet of the end of the forcemain for PS 3 was lined in the summer of 2016 due to corrosion issues. A condition assessment of the force main in 2018 indicated that the remainder of the pipe was still in good condition, however approximately 50 feet of the force main discharge end will be relined as part of the funding by CWSRF 4445 and is estimated to be complete in the fall of 2019.	
2	How many SSOs have occurred in each of the last three calendar years? What is the most frequent cause?	During the last three years, there have been 23 SSOs (9 in 2016, 4 in 2017 and 10 in 2018). The most frequent cause is blockages and hydraulic overload.	
3	Of those SSOs, how many basement backups occurred in each of the last three calendar years? How are they documented?	During the last three years (2016, 2017 and 2018), there has been five documented basement backups. They were documented as SSOs on the MA DEP SSO/Bypass Notification Form per our ERP.	
4	What is the ratio of peak wet-weather flow to average dry-weather flow at the wastewater treatment plant (or municipal boundary for satellite collection systems)?	The ratio of peak wet weather flow to average dry weather flow is approximately 4.5. For rare, extreme events, ratios as high as 7 (or more) have been observed. The average flow at the plant is 1.7 MGD.	
5	What short-term measures have been implemented or plan to be implemented to mitigate the overflows? If actions are planned, when will they be implemented?	In conjunction with the Town's roadway improvement capital plan, the sewer collection system condition assessment has been advanced to identify defects in the system that have been corrected or in the process of being corrected prior to any paving work. In addition, increased community awareness is made in the Sewer Department's quarterly newsletter about discarding grease and wipes down the sewer. Other short-term measures that have been implemented include prioritizing repairs based on work order comment conditions to reduce mechanical failures, improving the sludge transfer process, utilization of backup diversion pump systems, and improved photo/follow-up	

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		work order documentation through use of tablets, SEMS system, and Utility Cloud. SOP's are updated on an as needed as well as prioritization of critical replacements, both via ongoing contract operations and implementation of the Asset Management Plan. Modifications for the Primary distribution box have been developed and discussed. Implementation is part of the annual R&M as well as major SRF funded capital improvements and repairs. Implementation is part of annual R&M as well as ongoing major SRF funded capital improvements and repairs.	
6	What long-term measures have been implemented or plan to be implemented to mitigate the overflows? If actions are planned, when will they be implemented?	Long term measures have been identified in the Asset Management Plan and funding these improvements have been included as part of the annual capital and operating budgets.	
7	Describe your preventive maintenance program; how do you track it (e.g., card files, electronically, with specific software)?	The preventative maintenance software programs including Utility Cloud for horizontal assets and SEMS CMMS. Work orders generated by plant staff from identification of a task, through work progress to completion and reminders. Preventative maintenance work orders are scheduled on a regular basis and can be assigned to specific operators for completion. Then, the records are exported and reviewed by Town staff on a monthly and annual basis.	
8	How do you prioritize investigations, repairs and rehabilitation? What critical and priority problem areas are addressed more frequently than the remainder of your system? How frequently are these areas evaluated?	The Town inspected and assessed its Reinforced Concrete Pipe (RCP) sewer "***main interceptor***" pipeline and manholes in 2004 and 2009. From these assessments, Kleinfelder engineers recommended renewal of approximately 12,300 liner feet of interceptor pipeline based on interceptor segments with PACP structural ratings equal to or greater than 4. The poor structural condition was a result of hydrogen sulfide induced corrosion to the internal pipe wall. The recommended renewal project was executed through two construction contracts in 2005 and 2010 with an associated cost of $2.13 Million (in 2005/2010 dollars). The reported cost included construction and engineering, but not the cost of performing the assessments. The two contracts consisted of cured-in place pipelining (CIPP) of approximately 55% of the sewer interceptor, which ranged between 14 and 36 inches in diameter; as well as renewal of 15% of the interceptor manholes. The current operations contract with W&C provides guidance and quotas for performing routine inspection and cleaning of the collection system, including recommended annual quotas for sewer CCTV, sewer cleaning, manhole inspections, grinder pump replacement and wet well cleaning. These inspection and cleaning quotas will be reevaluated and reprioritized as part of the CMOM Corrective Action Plan. The Town hired W&C to complete a Town-wide fiscal	

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		sustainability plan, that uses risk-based asset management to determine prioritization of the collection system and WWTF assets. The analysis provided a list of critical assets that aided the creation of the Town's capital improvement plan and was completed in 2017. The following critical and priority problem areas have been addressed as a result of the Town's risk-based asset management: The prioritization of the collection system led to rehabilitation of the Town's most critical collection system asset the remaining portion of the 36-inch RCP interceptor). This project is currently under construction for an awarded contract of approximately $3.5M. The prioritization of the collection system also led to the rehabilitation of a sewer sub-area along Atlantic Ave known for excessive I/I and structurally deteriorating sewer pipes and force mains (sewer tributary to PS1). This project is currently under construction for an awarded contract of approximately $3.0M. The Town funded these rehabilitation efforts through the CWSRF #4445 loan and will be completing rehabilitation by the end of 2019. Copies of the Pre-Construction Agendas are attached to provide more details of the specific work for each of the ongoing projects. The development of a list of critical replacements for electrical/mechanical equipment at the Town's WWTF. Although, bidding under the CWSRF #4445 resulted in less than the expected bids, a new trailer-mounted wastewater bypass pump will be purchased through the program. The remaining items will be reevaluated and considered for procurement directly by the Town Finally through the CWSRF planning program, the Town has prioritized and successfully funded a town-wide SSES that will investigate sources of I/I in the oldest portions of their collection system (i.e. locations that are most likely to have excessive I/I based on historical operations, locations that non-PVC, and locations that are not currently being rehabilitated. The Town utilizes a risk-based asset management program for their collection system, with the risk analysis being updated every few years as significant projects are identified and completed.	
9	Are septage haulers required to declare the origin of their "load"? Are records of these declarations maintained? Do any of the declarations provide evidence of SSOs?	No septage is accepted at this time. Landfill leachate from a Cohasset construction material landfill, that was historically trucked to the site for treatment, ceased prior to May of 2015.	

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III.A. Collection System Management Organizational Structure

IIIA	Question	Response	*Act
1	Do you have an organizational chart that shows the overall personnel structure for collection system operations, including operation and maintenance staff? Please attach your chart.	Yes. An organizational chart (attached) outlines the Town and Contract Operator staffing plan and the relationship between the organizations. The Town has added an additional full-time staff engineer to the Sewer Dept. staff beginning in February 2019.	
2	For which jobs do you have up-to-date job descriptions that delineate responsibilities and authority for each position?	All the Town of Hull Sewer Department and the Woodard & Curran Contract Operations positions have updated job descriptions and authority requirements.	
3	How many staff members are dedicated to collection system maintenance? Of those, how many are responsible for any other duties, (e.g., road repair or maintenance, O&M of the storm water collection system)? If so, describe other duties.	The Contract Operator has a staff of 6 full time, plus technical support staff, to oversee the wastewater system, both collections and treatment facility operation and maintenance. There are 2 part-time seasonal interns and other part-time support staff as well. The W&C staff also oversee the operation of the D Street storm water pump station. Sewer Department staff consists of the Director of Wastewater Operations, Assistant Director of Wastewater Operations, Bookkeeper/Clerk, and the Facility Coordinator.	
4	Are there any collection system maintenance position vacancies? How long has the position(s) been vacant?	There are no vacancies at this time.	
5	For which, if any, maintenance activities do you use an outside contractor?	Outside contractors are used for: - Sewer Jetting - Sewer Cleaning - CCTV - Many types of Repairs (e.g. excavation, replacement of covers, heavy mechanical work at pump stations) - Wet Well cleaning - SSES work (flow isolation, smoke testing, dye testing, building inspections, manhole inspections)	
6	Describe any group purchase contracts you participate in.	The Contract Operator participates in several group purchase contracts, such as Commbuys, community purchasing, USA Bluebook, Aqualine, Wind River, Waterline Industries and O'Connor.	

III.B. Collection System Management: Training

IIIB	Question	Response	*Act
1	What types of training are provided to staff?	Safety and technical training are provided to staff regularly in accordance with Contract Operation requirements and MA DEP Operator Certification requirements. Both in-house specialty training and external resources are utilized.	
2	Is training provided in the following areas: general safety, routine line maintenance, confined space entry, MSDS, lockout/tagout, biologic hazards, traffic control, record	Yes. On a monthly basis, staff are required to participate in a safety meeting PureSafety training. Safety training topics include: - Hazard Communication (safety data sheets)	

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	keeping, electrical and instrumentation, pipe repair, public relations, SSO/emergency response, pump station operations and maintenance, trench/shoring, other (describe)?	- Biologic Hazards - Defensive Driving - Lockout/tagout - Fall Protection - Ergonomics Annual (or as needed) in-plant training is provided for the following items: - General Safety - Pump Station Operations and Maintenance - SSO/Emergency Response/EAP - Routine line maintenance - Confined space entry - Electrical and instrumentation	
3	Which training requirements are mandatory for key employees?	All monthly training items listed above are mandatory for key employees. Additional programs such as forklift training or Qualified Electrical Workers are required for employees who utilize those pieces of equipment.	
4	How many collection system employees are certified (e.g, NEWEA certification program) and at what grade are they certified?	The Contract Operator Project Manager has a NEWEA Grade 3 Collections System certification. All O&M Staff have the appropriate Mass DEP Wastewater Certifications, and some of the staff have National Association of Sewer System Cleaning Operators (NASSCO) Pipeline Assessment and Certification Program (PACP) certification. One current on-site staff and one technical support staff and the Town of Hull DPW Director are NASSCO/PACP certified. Collections system subcontractors who preform inspections are NASSCO/PACP certified.	

III.C. Collection System Management: Communication and Customer Service

IIIC	Question	Response	*Act
1	Describe your public education/outreach programs (e.g., for user rates, FOG, extraneous flow, SSOs etc.)	The Sewer Department mails "Sewer Works" (formerly Down the Drain) newsletters quarterly with sewer bills to rate payers with information ranging from current and planned activities, funding updates, completed projects, reminders about what to dispose in sewers, introduction to plant activities to emergency management of grinder pumps. The Town also utilizes a Facebook and a webpage for Sewer Department information. We also provide facility tours, when requested, for school children, interns, and other groups.	
2	What are the most common collection system complaints? How many complaints have you received in each of the past three calendar years?	The most common complaints include sewer blockage/backup issues due to wipes and odor complaints.	
3	Are formal procedures in place to evaluate and respond to complaints?	Hull Sewer Department Office receives calls for sewer related complaints and passes them on to the Contract Operator to respond when needed, per Contract Requirements.	
4	How are complaint records maintained (i.e., computerized)? How are	Complaint records are maintained through work orders generated in Utility Cloud and/or SEMS. When a call is	

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	complaints tied to emergency response and operations and maintenance programs?	received from the Sewer Department, the WWTF is asked to respond or address the complaint as determined by the Sewer Dept. office. Per Contract Operations, Odor, backup and grinder pump service complaints are tracked and managed using Utility Cloud and/or DoForms/SEMS. The goal is to track the majority of these items in the future using Utility Cloud.	

III.D. Collection System Management: Management Information Systems

IIID	Question	Response	*Act
1	How do you manage collection system information? (Commercial software package, spreadsheets, data bases, SCADA, etc). What information and functions are managed electronically?	Collection system information is managed by several database systems including Utility Cloud, ESRI ArcGIS, SCADA, CMMS (SEMS Technologies coupled with DoForms) and Hach WIMS. SCADA provides real time information associated with the pump stations and stores the data for basic trending. Utility Cloud, Hach WIMS and the SEMS CMMS are used to manage the daily inspection data and maintenance activities for the entire wastewater system.	
2	What procedures are used to track and plan collection system maintenance activities?	The CMMS systems (Currently a combination of Utility Cloud and SEMS Technologies and DoForms) are used to manage and document scheduled, non-scheduled and other maintenance activities (Corrective, Emergency Repair etc.). Collection system maintenance is also prioritized through the Town's fiscal sustainability plan.	
3	Who is responsible for establishing maintenance priorities? What records are maintained for each piece of mechanical equipment within the collection system?	The W&C Operations contract sets basic inspection and cleaning quotas for the collection system. Ongoing work and prioritization is coordinated through the sewer department. For the past two years priorities have been focused on cleaning and CCTV prior to the Town's roadway improvement capital project. For pump stations, there is a wet well cleaning and inspection schedule set by the Contract Operator, which is fulfilled, logged and reported through the SEMS Work Order System. Grinder Pump inspections or maintenance history is maintained by the Town Sewer Department and the Contract Operator. If there are potential issues with the grinder pumps, the Sewer Department receives the call and processes a Work Order request through the Contract Operator. Oversight and direction is provided by the Sewer Department in coordination with their Contract Operator.	
4	What is the backlog for various types of work orders?	As of July 31, 2019, there are approximately 500 backlogged work orders. 20% Collection System 80% Wastewater Treatment Plant	
5	How do you track emergencies and your response to emergencies? How do you link emergency responses to your maintenance activities?	Emergencies are typically processed as an emergency or high priority work order, classified by type. For example, if a blockage is reported at an address, then the inspection of the sewer line and manholes upstream and downstream are documented using a high-priority Manhole Inspection form	

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		and any subsequent high-priority work orders. There are separate emergency documentation procedures for SSO's, Grinder Pumps and Safety items. Follow up repairs and inspections are scheduled using Work Order reference number in the Utility Cloud and/or SEMS databases. All forms are completed electronically.	
6	What written policies/protocols do you have for managing and tracking the following information: complaint work orders, scheduled work orders, customer service, scheduled preventative maintenance, scheduled inspections, sewer system inventory, safety incidents, emergency responses, scheduled monitoring/sampling, compliance/overflow tracking, equipment/tools tracking, parts inventory?	The WWTF electronically tracks the following items using DoForms, Utility Cloud and SEMS: - Complaints - Scheduled Service - Customer Service - Scheduled Preventative Maintenance - Scheduled Inspections - Safety Incidents - Emergency Response - Compliance/Overflow Tracking The Contract Operator updates the WWTF O&M Manual and SOPs. An inventory SOP will include an updated equipment and parts inventory tracking procedure.	

III.E. Collection System Management: SSO Notification Program

IIIE	Question	Response	*Act
1	What are your procedures, including time frames, for notifying state agencies, health agencies, regulatory authorities, and the drinking water authorities of overflow events?	Initial notification is provided via email within 24 hours. The complete SSO report is provided within five days of the event	
2	Do you use the state standard form for recording/reporting overflow events? If not, provide a sample copy of the form that is used.	We use the MA DEP standard form for recording/reporting overflow events. Please refer to the ERP dated 8/26/2016 for specifics.	

III.F. Collection System Management: Legal Authority

IIIF	Question	Response	*Act
1	Are discharges to the sewer regulated by a sewer use ordinance (SUO)? Does the SUO contain procedures for controlling and enforcing the following: □ FOG; □ Infiltration/ Inflow (I/I); □ building structures over the sewer lines; □ storm water connections to sanitary lines; □ defects in service laterals located on private property; □ sump pumps?	Yes. The Town of Hull Permanent Sewer Commission adopted the Sewer Use Ordinance in its current form 10/26/1987. The SUO includes procedures for controlling: - FOG - Building Structures over Sewer Lines - Stormwater Connections - Service Lateral Defects - Sump Pumps - Grinder Pumps - Illegal Connections	
2	Who is responsible for enforcing various aspects of the SUO? Does this party communicate with your department on a regular basis?	Enforcement of the SUO falls onto the Town of Hull, Director of Wastewater and the Assistant Director of Wastewater Operations who communicates with the Contract Operator on a regular basis.	

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3	Summarize any SUO enforcement actions/activities that have occurred in the last three calendar years.	Currently inspections to identify sump pumps is covered by the Town bylaw that when a property is transferring ownership, that an inspection is done. Approximately 150 sump pump inspections are performed per year. In 2016, 2017, and 2018 six illegal sump pumps have been found and corrected. The Sewer Department is tracking sump pumps using an excel spreadsheet.	
4	Do you have a program to control FOG entering the collection system? If so, which of the following does it include: □ permits, □ inspection □ enforcement? Are commercial grease traps inspected regularly and who is responsible for conducting inspections?	The Sewer Department has established the FOG regulations. The Board of Health is responsible for grease trap inspections which are performed with restaurant annual inspections between October and December of each year. Each restaurant is responsible for providing the Board of Health with the cleanout reports and company doing the work.	
5	Is there an ordinance dealing with storm water connections or requirements to remove storm water connections?	§149-17 of Hull SUO prohibits stormwater and all other unpolluted drainage from being discharged to sanitary sewers.	
6	Does the collection system receive flow from satellite communities? Which communities? How are flows from these satellite communities regulated? Are satellite flow capacity issues periodically reviewed?	Yes, there is an Inter-Municipal Agreement (IMA) with Cohasset and Hingham to accept flows in Hull For the IMAs, bills are based on water meter readings as provided from the Towns.	
7	Does the collection system receive flow from private collection systems? If yes, how is flow from these private sources regulated? How are overflows dealt with? Provide details, including contact information for these private systems.	The collection system receives flows from private grinder pumps. For any problems brought to the attention of the Sewer Dept. related to these privately-owned grinder pumps, the owners are directed to contact the local vendor, FR Mahoney. There are also several condominium complexes in town that are responsible for their own collection systems and are required to adhere to Hull's SUO.	

IV.A. Collection System Operation: Financing

IV A	Question	Response	*Act
1	Has an enterprise (or other) fund been established and what does it include: wastewater collection and treatment operations; collection system maintenance; long-term infrastructure improvements; etc.? Are the funds sufficient to properly fund future system needs?	A sewer enterprise fund has been established and it includes wastewater collection and treatment operations – collection system maintenance and debt payment for infrastructure improvements as recommended by the Asset Management Plan and the Fiscal Sustainability Plan. A$140K capital budget is included the contracted operations and the Sewer Department budget includes an additional $200K. The Enterprise fund includes costs of administration and of items such as insurance and payments to the general fund for health insurance, pension, support for accounting, legal, treasurer/collector etc.	
2	How are rates calculated (have you done a rate analysis)? What is the current sewer charge rate? When was	The recommended rate structure was part of the Fiscal Sustainability Plan. Projections were made and incorporated into a rate model to provide revenue based on	

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	it last increased? How much was the increase?	planned capital expenditures. The Fiscal Sustainability Plan provides 10 year projections and these are reviewed as needed. Rates are calculated by taking the total budgeted costs divided by the total number of 100 cubic foot units billed. The current rate is $14.00 and a base fee of $15.00 per month was implemented This rate went into effect on billing starting 4/1/19-06/30/19 and received during fiscal year 2020. The percent increase was 7.5%. This increase was necessary to fund the debt needed to implement the asset management plan.	
3	What is your O&M budget?	The FY 2020 O&M budget is $3,981,326, not including debt service.	
4	If an enterprise fund has not been established, how are collection system maintenance operations funded?	N/A	
5	Does a Capital Improvement Plan (CIP) that provides for system repair/replacement on a prioritized basis exist? What is the collection system's average annual CIP budget?	An asset management plan was created, and projects are underway utilizing SRF, Grants, and traditional debt. In total $22.6M of debt has been approved at Town Meeting and taken out to address the plan. Overall budget spent from 2016 to 2018 was an average of $634,386 per year for collection system work.	
6	How do you account for the value of your system infrastructure for the Government Accounting Standards Board standard 34 (GASB 34)?	GASB 34 – annually major assets purchased during the fiscal year are provided to the accounting office. Straight line Depreciation is applied to the assets.	

IV.B. Collection System Operation: Hydrogen Sulfide Monitoring and Control

IV B	Question	Response	*Act
1	Are odors a frequent source of complaints? How many have been received in the last calendar year?	Odors are an occasional source of complaints with only 3 in 2018 and none so far in 2019.	
2	Do you have a hydrogen sulfide problem, and if so, do you have corrosion control programs? What are the major elements of the program?	Hull has had hydrogen sulfide problems and related corrosion within the system. Since 2018, Bioxide addition is used in PS 3 as the main method of keeping H2S generation at a minimum. Seasonal ferric chloride addition can be used at PS 6 as need to provide additional H2S reduction in the collection system. Wet well aerators have been installed and IN-PIPE bacteria is added to 24 locations within the collection system to reduce FOG and sulfides. A permanent chemical system (or systems) to decrease hydrogen sulfide levels within the collection system and at the wastewater plant is part of ongoing facility/resiliency planning.	
3	Does your system contain air relief valves at the high points of the force main system? How often are they	The collection system does not contain air relief valves at forcemain highpoints on any of the 7 main pump stations. The grinder pump pressure lines will be evaluated and	**A**

* Put an "A" in the final column if this is an issue you intend to address with future action.

	inspected? How often are they exercised?	inspected as part of the town's roadway improvement capital plan to determine the existence and condition of any air/vac relief valves. Air release valves will be purchased as part of critical spare parts, and an SOP needs to be created for inspection and replacement.	

IV.C. Collection System Operation: Safety

IV C	Question	Response	*Act
1	Do you have a formal Safety Training Program? How do you maintain safety training records?	Yes. The Contract Operator has a formal safety program which outlines training, awareness and protection equipment for all staff and contractors. Safety records are maintained through specific location logs.	
2	Which of the following equipment items are available and in adequate supply: □ rubber/disposable gloves; □ confined space ventilation equipment; □ hard hats, □ safety glasses, □ rubber boots; □ antibacterial soap and first aid kit; □ tripods or non-entry rescue equipment; □ fire extinguishers; □ equipment to enter manholes; □ portable crane/hoist; □ atmospheric testing equipment and gas detectors; □ oxygen sensors; □ H2S monitors; □ full body harness; □ protective clothing; □ traffic/public access control equipment; □ 5-minute escape breathing devices; □ life preservers for lagoons; □ safety buoy at activated sludge plants; □ fiberglass or wooden ladders for electrical work; □ respirators and/or self-contained breathing apparatus; □ methane gas or OVA analyzer; □ LEL metering?	□ rubber/disposable gloves; - YES □ confined space ventilation equipment; - YES □ hard hats, - YES □ safety glasses, - YES □ rubber boots; - YES □ antibacterial soap and first aid kit; - YES □ tripods or non-entry rescue equipment; - YES □ fire extinguishers; - YES □ equipment to enter manholes; - YES □ portable crane/hoist; - YES □ atmospheric testing equipment and gas detectors; - YES □ oxygen sensors; - YES □ H2S monitors; - YES □ full body harness; - YES □ protective clothing; - YES □ traffic/public access control equipment; - YES □ 5-minute escape breathing devices; - N/A □ life preservers for lagoons; - N/A □ safety buoy at activated sludge plants; - YES □ fiberglass or wooden ladders for electrical work; - YES □ respirators and/or self-contained breathing apparatus; - N/A □ methane gas or OVA analyzer; - YES □ LEL metering -YES	

IV.D. Collection System Operation: Emergency Preparedness and Response

IV D	Question	Response	*Act
1	Do you have a written collection system emergency response plan? When was the plan last updated? What departments are included in your emergency planning?	Yes, the Contract Operator developed a written Emergency Response Plan (ERP) in August 2016. Town Sewer Department, Town Manager, and Town Emergency Response Committee were coordinated with as a part of the plan.	

* Put an "A" in the final column if this is an issue you intend to address with future action.

2	Which of the following issues are considered: □ vulnerable points in the system, □ severe natural events, □ failure of critical system components, □ vandalism or other third party events (specify), □ other types of incidents (specify)?	Within the Emergency Response Plan, all of the following issues are considered: - Vulnerable points in the system (critical pump stations to address immediately, low points in the collection system) - Storm Events and Predicted High Flow Scenarios - Backup Systems Initiation due to pump failure/generator use - SSO's - Internet/Electrical Outages - Town of Hull Emergency Notification Procedures	
3	How do you train staff to respond to emergency situations? Where are responsibilities detailed for personnel who respond to emergencies?	Staff is trained by holding Mock Storm Drills, as part of the mock drills we update ERP plan and review with staff. ERP defines responsibilities.	
4	How many emergency calls have you had in the past calendar year?	There have been 3 Emergency SSO calls in the past calendar year (2018) from residents. Other SSOs were reported by Town and operations staff.	

IV.E. Collection System Operation: Engineering – Capacity

IV E	Question	Response	*Act
1	How do you evaluate the capacity of your system and what capacity issues have you identified, if any? What is your plan to remedy the identified capacity issues?	As part of the regional sewer planning viability study, Hull's collection and treatment systems capacity were updated to reflect future flow projections in undeveloped areas of Hull. Capacity was evaluated previously in 1977, 1984 and 1998 the plant has adequate capacity for normal flow, but not for extreme flow events, such as the "No-Name" storm of 1991. Several requests have been submitted in the past to allow for diversion of extreme flows beyond the capacity of the sewer system; this currently occurs using portable emergency pumps on an as needed basis. A trunk-line hydraulic model (pipes located in the Interceptor System) was developed to understand the theoretical capacity of the Interceptor. The model indicated that interceptor has sufficient capacity during wet weather to transport flow to the WWTF. This was proved to be true during recent large storms in 2018 that did not result in SSO along the interceptor. The outfall condition and capacity and well as the overall facility capacity is being evaluated under the current CWSRF planning studies.	
2	What procedures do you use to determine whether the capacity of existing gravity sewer system, pump stations and force mains are adequate for new connections? Who does this evaluation?	The capacity of the wastewater treatment plant outfall is being evaluated as part of the current SSES planning study. Capacity of some of the wastewater collection system pump stations and sewer system was evaluated as part of a recent regional study by Woodard & Curran Engineers. Much of the Town is already sewered and there is only limited future sewer connections feasible. For any new sewer connections, the Building Department requires the property owner to	

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		obtain a capacity letter from the sewer Department indicating that capacity exists for the building. Typically, for single family homes, engineering judgment and size of connecting sewer is the basis of this determination. Larger new developments are required to provide flow projections and demonstrate capacity exists before permits are issued. As part of the low-pressure sewer areas, capacity for new homes is based on projection information provided at the time of design.	
3	Do you charge hookup fees for new development and if so, how are they calculated?	The town charges a rehabilitation fee – it is based on the Flow Estimation Table from the MA DEP 314CRM 7.15 stating that each bedroom uses 110 gallons a day. The cost per equal dwelling unit (normally a bedroom) is $500.00. The Flow Estimate Table is used to calculate a equal dwelling unit for places like a restaurant. Each seat in a restaurant uses X gallons per day – for each 110 gallons a day we charge $500.00	
4	Do you have a hydraulic model of your collection system? Is it used to predict the effects of system remediation and new connections?	A preliminary hydraulic model of the main interceptor line was developed in 2017. Although the model could be used to predict the effects of system remediation and new connections, there has been no reason for the Town to complete this effort.	

IV.F. Collection System Operation: Pump Stations - Inspection

IV F	Question	Response	*Act
1	How many pump stations are in the system? How often are pump stations inspected? How many are privately owned, and how are they inspected? Do you use an inspection checklist?	7 major pump stations that are checked daily and over two hundred grinder pumps, of which about 175 are owned by the town. See section I.2 for more details.	
2	Is there sufficient redundancy of equipment at all pump stations?	The current system has two pumps at each pump station as well as emergency power. All stations currently have sufficient redundancy.	
3	How are pump stations monitored? If a SCADA system is used, what parameters are monitored?	Pump stations are monitored using SCADA. Flow, power status and communication are monitored. SCADA system currently operates based on hard-wired telemetry system, supplied through Verizon, that was installed in the 1980's and upgraded in the mid-1990's. This hard-wired communication system is old and unreliable and needs to be upgraded to current technology as the components (modems, etc.) within the system are obsolete and no longer supported.	A
4	How many pump station/force main failures have you had in each of the last three years? Who responds to pump station/force main failures and	None in 2016, 2017 and 2018, however, as a preventive measure, the end of the force main from PS 3 was lined. Before the condition assessment for force main for PS3 was completed, an emergency bypass plan was prepared in the	

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	overflows? How are the responders notified?	event of a failure. Recently in 2019, PS 4 had a forcemain failure. See ERP for response plan	
5	How many pump stations are equipped with backup power sources? How many require portable generators? How many portable generators does your system own? Explain how the portable generators will be deployed during a system-wide electrical outage.	See section I.2. The portable generator for PS A is kept at the wastewater plant and deployed when needed.	
6	Are operation logs maintained for all pump stations? Are the lead, lag, and backup pumps rotated regularly?	Pump station checks are logged in DoForms daily. Pumps are typically running in alternating control mode.	
7	Is there a procedure to modify pump operations (manually, or automatically), during wet weather to increase in-line storage of wet weather flows? If so, describe.	We currently do not change anything at the pump stations for additional storage during high flow events, but several stations do reach a high wet well level and operate at that level without causing any known backups or overflows. We do use the new influent sluice gate at the wastewater facility to throttle flow entering the plant thereby using the storage capacity within the main interceptor.	

V.A. Equipment and Collection System Maintenance: Sewer Cleaning

V A	Question	Response	*Act
1	What is your schedule for cleaning sewer lines on a system-wide basis? At this frequency, how long will it take to clean the system? How are sewer cleaning efforts documented?	Contract has a quota of 20 % per year, actual based on priority needs. Since 2017, focus has been made to assess sewers in areas where roads will be paved as part of the town wide roadway capital improvement plan. To be updated and reevaluated as part of the SSES planning efforts as well PACP guidelines are used for reporting condition assessments.	
2	How many linear miles of the collection system were cleaned in each of the past 3 calendar years?	2016 - 5,000 LF 2017 – 14,500 LF 2018 – 30,105 LF	
3	How do you identify sewer line segments that have chronic problems and should be cleaned more frequently? Is a list of these areas maintained and cleaning frequencies established?	Sewer segments that have chronic problems are tracked using Utility Cloud, many of these sewers include small diameter easement sewers or sewers that have had past grease or root problems.	
4	Approximately, how many collection system blockages have occurred during the last calendar year, and what were the causes?	14 reported backup/complaints were documented in 2018 using Utility Cloud. The backup/complaints/blockages were caused by homeowner lateral/plumbing issues, grease, debris and roots. Utility Cloud reporting for 2018 is summarized in the table below and it allows improved tracking for work orders of different types.	

Type of Work Order	Count
CCTV Data Upload	2
Generic WO	12
Hull - Grinder Pump Maintenance	11

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		Hull - In Pipe Bacteria Units	187
		Hull – Mark out	302
		Hull - Sewer Backup	12
		Hull - Sewer Customer Complaint	2
		MH Frame & Cover Inspection	61
		NASSCO MACP w Header	110
		Sewer Main Cleaning & CCTV	6
		Sticker Replacement - Grinder Panels	2
		Grand Total	**707**
5	Has the number of blockages increased, decreased, or stayed the same over the past five years?	The number of blockages from grease has reduced over the past couple of years since the introduction of the IN-PIPE bacteria and the wet well aerators reducing grease buildup in the system. The increased utilization of Utility Cloud will allow for improved tracking of blockages and causes.	
6	What equipment is available to clean sewers? Is any type of cleaning contracted to other parties? If yes, under what circumstances?	Contractors with trailer jetters or combination jetter/vactors are used for sewer cleaning, both for regular basis and emergency service.	
7	Do you have a root control program? Describe its critical components.	The Town contracts with Duke's to complete chemical root treatment of sewers with known root issues. The Town has completed approximately 5,000 LF of chemical root treatment between 2018-2019.	

V.B. Equipment and Collection System Maintenance: Maintenance Right-of-Way

V B	Question	Response	*Act
1	Is scheduled maintenance performed on Rights-of-Way and Easements? At what frequency? How many manholes in easement areas cannot be located?	Since 2017, sewer maintenance and condition assessments have been focused in conjunction with the town wide roadway capital improvement program. There are relatively few easements within the system.	
2	Are road paving projects coordinated with the collection system operators? Have manholes been paved over? How many manholes in paved areas cannot be located? Describe any systems in place for locating and raising manholes that have been paved over.	Yes, the current town five–year road paving project has been coordinated with the collection system engineer through the Sewer Department. There was specific sewer inspections and repairs performed and that coordination is currently ongoing. There have been no known manholes paved over nor are there any known manholes in paved areas which cannot be accessed. The Town inspected approximately 21,000 LF of sewer as part of a roadway improvements program in 2018 and plans to complete a similar scope in the Fall of 2019.	

V.C. Equipment and Collection System Maintenance: Parts Inventory

V C	Question	Response	*Act
1	Do you have a central location for the storage of spare parts?	Spare parts are located in the Wastewater plant	
2	How have critical spare parts been identified?	Critical replacements were identified and publicly bid, however, only one qualified vendor provided a bid for which procurement is in process (2019). The other	**A**

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		identified items will be rebid or purchased independently over the coming year. Also, as part of the ongoing (2019) Reliability Centered Maintenance (RCM) capital planning work, additional items will likely be identified.	
3	How to you determine if adequate supplies on hand? Has an inventory tracking system been implemented?	Inventories of spare parts are kept on Excel logs, which can help with ordering supplies. A formal inventory tracking system is being developed as part of the ongoing implementation of the CMMS.	

VI A. SSES: System Assessment

VI A	Question	Response	*Act
1	Do POTW flow records or prior I/I or SSES programs indicate the presence of public/private inflow sources or sump pumps? Please Explain.	Plant historical flow data and prior system assessments indicated public and private I/I. The Town recently (2019) began a town-wide SSES program to identify sources of I/I. Public/private inflow sources will be documented through external/internal inspections of approximately 500 buildings. If there is a high rate of success finding public/private inflow sources additional building inspections will be completed.	
2	If problems are related to I/I, has a Sewer System Evaluation Survey (SSES) been conducted? When? What is the status of the recommendations?	Various studies have been done over the years 1974 study by Whitman & Howard 1983 Evaluation by Black 7 Veatch 1984 study by CDM 1999 Summary study by Tighe & Bond 2005 Straights Pond area study by W&C The town wide SSES is part of the current (2019) SRF funded planning work being performed by W&C.	
3	Do you have a program to identify and eliminate sources of I/I into the system including private service laterals and illegal connections? If so, describe.	The Town-wide SSES will document sources of I/I and future capital improvement projects will evaluate the cost-effectiveness of removing I/I. In addition, since 2017, manhole frames and covers have been replaced for those found to be leaking or worn and prone to leaking. See also item 5 below.	
4	Have private residences been inspected for sump pumps and roof leader connections?	Programs to identify and remove sump pumps was performed several times in the past. Approximately 500 residences will be inspected (internal/external) this fall/summer (2019).	
5	Are inspections to identify illicit connections conducted during the property transfer process?	Yes. Currently inspections to identify sump pumps is covered by the Town bylaw that when a property is transferring ownership, that an inspection is done.	
6	How many sump pumps and roof leaders have been identified? How many have been removed?	The sump pump inspection by-law was passed in May 2007. Approximately 7 or 8 have been redirected. (Realtors know that the sump pumps need to be directed outside, so they make sure that they are directed outside before we come to inspect them – similar to they change the smoke detectors before the fire department comes to inspect.)	
7	Have follow-up homeowner inspections been conducted?	Follow up inspections were done for the five or six we found.	
8	What incentive programs exist to	No current incentive program	

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	encourage residences to disconnect roof leaders & sump pumps? (i.e. matching funds, etc.)		
9	What disincentive programs exist to encourage residences to disconnect roof leaders & sump pumps? (i.e. fines, surcharges)	A fine of $25.00 per day for each day in violation can be imposed – So far when we have found an illegal sump pump, they fix it the same day so they can sell the property.	

VI.B. SSES: Manhole Inspection

VI B	Question	Response	*Act
1	Do you have a manhole inspection and assessment program?	Since 2017, manholes have been inspected as part of the planned sewer improvement projects and in conjunction with the town wide roadway improvement program. The PACP type 1 assessment using a standard inspection form is used. A manhole repairs are performed as needed. The Town-wide SSES aims to inspect all of the Town's manholes located in the older parts of the collection system (i.e. non-PVC areas and areas currently under rehabilitation).	
2	Has a formal manhole inspection checklist been developed?	Yes, a formal manhole inspection checklist has been developed in accordance with NASSCO standards.	
3	How many manholes were inspected during the past calendar year?	Manhole inspections are tracked via the Town's Utility Cloud System and in 2018 the Town inspected approximately 110 manholes. A significant manhole inspection task was completed in 2017 as part of CWSRF #4445 design efforts, and approximately 875 manholes are planned to be inspected as part of the 2019/2020 SSES effort.	

VII. Energy Use

VII	Question	Response	*Act
1	What is your annual energy cost for operating your system? For which pieces of equipment do you track energy use?	The approximate annual energy cost for the wastewater treatment plant is about $230,000. We track several major energy users, including the major pumps, blowers and fans at the wastewater facility. for energy usage. The wastewater plant and the collection system pump stations have individual meters. We recently (2019) completed and Energy Grant upgrade at the WWTF - a copy of the report is attached.	
2	Have you upgraded any of your pumps and motors to more energy efficient models? If so, please describe.	The aeration blower system was upgraded in 2002, replacing the mechanical aerators for ½ of the wastewater plant. Several of the pump stations have been retrofitted with VFDs and when motors are replaced, more energy efficient motors meeting current energy efficiency standards are installed. See attached Energy Grant Report.	
3	Have you performed an energy audit in the past three years?	Yes – we performed an energy audit in preparation for the Energy Grant and also are doing additional energy and water conservation evaluation work as part of the current facility plan.	
4	Where do you use the most energy (fuel, electricity) in operating your	For the collection system, the highest energy use is the pump	

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	collection system?	stations pump motors and the individual grinders in each household located on the low pressure sewer. We also recently installed wet well aeration units to reduce FOG and ragging issues.	
5	If you have a treatment plant, would you be interested in participating in EnergyStar benchmarking of your treatment plant?	Yes. The Hull Sewer Department is now participating in the MassEnergyInsight tracking program as a requirement for receiving energy grant funding. The Plant energy is now updated monthly into the Mass Energy Insight website per energy grant reequipments.	

VIII. Other Actions

VIII	Question	Response	*Act
1	Describe any other actions that you plan to take to improve your CMOM Program that are not discussed above.	The ongoing Facility and Resiliency plan will look at resiliency upgrades at both the wastewater facility and the Pump Stations. This system wide approach should have a positive long-term impact of the system O&M. Also, the town recently removed the 40-year old underground UST diesel fuel tank and installed a new AST diesel fuel tank above the DFE elevation, as well as moving the main plant transformer out of the flood zone.	

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APPENDIX A: TOWN OF HULL, MA ORGANIZATION CHART

TOWN OF HULL, MA | WASTEWATER SYSTEM ORGANIZATION CHART

Personnel	Position	Contact	
Town of Hull			
Philip Lemnois	Town Manager	781.925.2000 (o)	-
Jim Dow	DPW Director	781.925.0900 (o)	-
Richard Matilla	Chairman	-	-
John Struzziery	Director of WW Operations	781.925.1207 (o)	781.490.2025 (c)
Brian Kiely	Assistant Director WW Operations	781.925.1207 (o)	781.738.7853 (c)
Carol O'Conner	Book Keeper / Clerk	781.925.1207 (o)	-
Terri Berardinelli	Facilities Coordinator	781.925.1207 (o)	-
W&C Operations and Management Staff			
Rob Scott	Area Manager	203.872.2547 (o)	860.204.7988 (c)
Aram Varjabedian	Project Manager	781.925.0906 (o)	339.214.8334 (c)
Bill Boornazian	Assistant Project Manager	781.925.0906 (o)	603.651.8773 (c)
Joe Basler	Lead Operator	-	339.214.8332 (c)
Eric Sutton	O&M Technician	-	339.214.8330 (c)
Dave Wilson	O&M Technician	-	339.214.8331 (c)
Ryan Holman	O&M Technician	-	339.205.8965 (c)
W&C Part Time Plant Staff			
Rodger Boltrushek	Weekend Support	-	508.272.2034 (c)
Dick Gould	Coverage Support	-	617.279.5741 (c)
Intern 1	Intern	-	-
Intern 2	Intern	-	-
W&C Engineering Support Staff			
Rosemary Blacquier	Client Manager	781.613.0644 (o)	-
Jason Kreil	Technical Manager	781.613.0469 (o)	-
Peter Lyons	Project Engineer	978.482.7901 (o)	-
Tim Harrison	Project Manager	925.627.4170 (o)	-

Woodard & Curran Support Staff
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Wendy Foreman | Health and Safety Admin
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Brenda Douglas | Part Time Project Admin
781.383.0057 (o)
Jackie Smith | Marketing Assistant
207.558.3726 (o) 207.749.4990 (c)

Updated 7-31-2019 by JF

APPENDIX B: TREATMENT PLANT & CMOM STATUS TABLE

Equipment/Process Cited	Deficiency (per inspection reports)	Corrective Action Planned	Implementation Schedule
Headworks Screening	Manual bar screens only, mechanical screen was Inoperable; headworks influent gate removed	New mechanical screen installed and operating. The influent gate was replaced Fall 2018. Structural repairs and HVAC upgrades in progress	Completed 2018 In Progress for 2019/2020
Primary Clarifiers	Lack of Redundancy, only 1 in service	*Short term actions:* Both clarifiers are only used for high flow management, the fully functional clarifier is used seasonally and taken offline during summer season for improved odor and sludge control during summer season. *Long term actions:* Evaluate future use and/or repurposing of primary clarifiers during unit process evaluation.	In Progress 2018 Part of 2019 SRF funded Facility and Resiliency Plan
Aeration Tanks	Lack of Redundancy, 2 out of 4, out of service	*Short term actions:* Rehabilitated both mechanical aerators; some RAS piping needs replacement). *Long term actions:* Review activated sludge process options to determine long term modifications to the aeration tanks and secondary treatment process.	Completed 2018 Part of 2019 SRF funded Facility and Resiliency Plan
Secondary Clarifiers	Lack of Redundancy, only 1 in service	Both secondary clarifiers are partially functional [RAS draft tube system is not functional in either clarifier], but plant has been able to maintain compliance by pulling RAS and WAS from the WAS pits. Typically, one unit in service during normal flows, a second unit is put on-line during high flow events, but operational inspection is required. *Short term actions:* Performed inspection of one clarifier RAS line and found major corrosion in the piping; suspect same condition in the other *Long term actions:* Evaluate process alternatives and then determine repair or replacement of the clarifiers.	In process 2019 Part of 2019 SRF funded Facility and Resiliency Plan
Gravity Sludge Thickeners	Lack of Redundancy, only 1 in service	Gravity Thickener #2 has been abandoned-in-place, and Gravity Thickener #1 is functional, but offline during summer months for odor control and sludge management. Long term use of Gravity Thickeners for sludge processing will be considered during unit process assessment, and tanks may be repurposed for other use.	Part of 2019 SRF funded Facility and Resiliency Plan
Sludge Holding Tanks	Need work and corrosion corrective maintenance/repairs	Above-ground Holding Tank was drained, cleaned and repaired, and is in use. Sludge Holding Tank #2 is in use. Sludge Holding Tank # 1 is offline and needs aeration diffusers.	Part of 2019 SRF funded Facility and Resiliency Plan
Rotary Drum Thickener	Old, Corroded and Operable with no redundancy	Extensive corrosion corrective maintenance was performed, and RDT back to full operation. However, redundancy will be considered as a part of unit process review.	Part of 2019 SRF funded Facility and Resiliency Plan
Disinfection (Chlorination and Dechlorination)	Temporary replacement post-disaster recovery, seems to be operating well	System is fully operational, but a more permanent stormproof solution to be considered during unit process review. Some Hypochlorite distribution tubing permanent repairs need to be implemented, pump and some containment area temporary repairs have been made.	Part of 2019 SRF funded Facility and Resiliency Plan
Building	Temporary offices still in parking lot	Temporary HVAC is still in place in the Control building, HVAC upgrades and office space repairs are under design by Tighe & Bond.	In Process – funded under Town Bonds
Emergency Diversion Pump	Available to be set up	Godwin diversion pump set up to bypass headworks and will be used as bypass pump for Headworks channel repairs, then moved to a permanent location.	In Process 2019
Emergency Generators	Smaller one needs preventative maintenance to be operable	Both generators and transfer switches have been repaired and are operational; Preventative maintenance ongoing as required. UST was removed and the new AST fuel tank installation was completed in early 2019.	Completed 2019

APPENDIX C: INTERCEPTOR RENEWAL PRE-CONSTRUCTION MEETING AGENDA

COMMITMENT & INTEGRITY
DRIVE RESULTS

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Dedham, Massachusetts 02026
www.woodardcurran.com

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PRE-CONSTRUCTION MEETING
Sewer Interceptor Pipeline Renewal
CWSRF #4445 – DEP Contract No. 1
July 9, 2019 1:30 PM
Hull WWTF
1111 Nantasket Avenue
Hull, MA 02045
PRE-CONSTRUCTION AGENDA

I. INTRODUCTION & PROJECT TEAM

KEY TOWN CONTACTS Various Departments (See Attachment for other Department Contacts)		
CONTACT	**EMAIL**	**PHONE**
John Struzziery, Director of Wastewater Operations/Assistant Director of Public Works	jstruzziery@town.hull.ma.us	781-925-1207
Brian Kiely, Assistant Director of Wastewater Operations	bkiely@town.hull.ma.us	781-925-1207
Carol O'Connor, Bookkeeper/Clerk	coconnor@town.hull.ma.us	781-925-1207
WWTF / COLLECTION SYSTEM OPERATIONS **Woodard & Curran, 1111 Nantasket Avenue, Hull MA 02045**		
CONTACT	**EMAIL**	**PHONE**
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ENGINEER **Woodard & Curran, 980 Washington St., Suite 325 N, Dedham, MA 02026**		
CONTACT	**EMAIL**	**PHONE**
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CONTRACTOR **Green Mountain Pipeline Services, 768 South Main Street, Unit 1** **Bethel, VT 05032**		
CONTACT	**EMAIL**	**PHONE**
Brent Ketner, Project Manager **Sahar Kunay**, Project Manager **Tim Vivian**, Vice President	brent@greenmountainpipe.com sahar@greenmountainpipe.com tim@greenmountainpipe.com	802-763-7022 508-690-2009
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION **1 Winter Street, Boston, MA 02108** **Lilla Dick** **Office: 617-556-1083**		

II. PROJECT LOGISTICS

Work Description:

- Project is funded by the Clean Water State Revolving Fund (CWSRF #4445, Contract No. 1). Therefore SRF paperwork is required (drawdown requests, change order forms, DEP Approvals, D/M/WBE requirements, AIS Requirements, Diesel Retrofit Program, Project Display Signs etc.)
- The project will rehabilitate the Town's corroded/deteriorated reinforced concrete sewer interceptor located along Nantasket Avenue/Fitzpatrick Way from Draper Avenue to the Hull WWTF. The sewer will be rehabilitated with cured-in-place pipe (CIPP) lining and epoxy manhole lining. The primary objective is to mitigate structural defects, remove infiltration, and increase the lifespan of the sewer system. The work will be substantially complete by November 5, 2019.
- The Work includes all labor, materials, tools, equipment and services required for construction, testing, and commissioning of the Work in accordance with the Contract Documents. The Work includes the following principal features:
    - Furnishing and installing temporary sewer main bypass systems to provide for the continuous flow of wastewater during construction.
        a. The system shall be designed to handle up to 4MGD.
        b. Average wastewater flow in the system is approximately 2 MGD, but can increase with intense rainfall. Work will not be allowed during storm events that are predicted to increase the flow in the system over 4 MGD.
        c. Bypass of pump stations as required for installation of the Work.
        d. Excavation is not allowed, except for the following locations:

            Central Fire Station

            Nantasket Avenue at A Street

            Nantasket Avenue at Kenberma Street

            Nantasket Avenue at Y Street, Beacon Road, and Fitzpatrick Way

            North end of Nantasket Avenue and Fitzpatrick Way

            Or other locations as approved by the Owner

    - 10,500 LF of 36-inch CIPP, epoxy lining of 800 VF of manhole, reinstating of approximately 170 service connections.
    - CIPP lining of a 4-barrel siphon (16", 10", 16", 18") and epoxy lining of the inlet and outlet structures
    - CIPP lining of a 2-barrel lagoon crossing (18", 24") and epoxy lining of the inlet and outlet structures
    - Curtain grouting of approximately 15 manholes upstream of the CIPP lining.
    - Removal of a drainage crossing at the intersection of Hadassah Way and Nantasket Avenue, and the rerouting of the existing drainage system towards Samoset Avenue.
    - Traffic and Pedestrian Management

Work Locations:

- Nantasket Avenue
- Fitzpatrick Way
- Nantasket Avenue (near Yacht Club/Spring Street)
- Hadassah Way

Work Restrictions:

- Existing frame clear opening varies between 22-23.5-inches, contractor shall install CIPP/temporary wastewater bypass without excavation of manhole frames and covers
- Contractor to coordinate installation of work with ongoing gas, water, and paving construction. Where conflict may exist, gas, water, and paving construction may take precedence over this project work.
- Contractor may not have active work or equipment on Nantasket Avenue between H and Z Street on July 27, 2019.
- Traffic control and pedestrian management plans to be submitted and approved by Engineer. 2-way traffic to be kept open to the greatest extent possible, flow of traffic to the north (Towards Hull Ferry and High School) shall be maintained at a minimum during the hours between 5:30AM and 9:00AM.

III. PROJECT SCHEDULE

Key Date	Duration	Date
Notice to Proceed	-	Monday, July 8, 2019
Substantial Completion	120	Tuesday, November 5, 2019
Post Substantial Completion Punch List	160	Sunday, December 15, 2019
Final Payment (Warranty Inspection and Final Pavement)	351	Tuesday, June 23, 2020

- Notice to Proceed/ Contract Start Date: July 8, 2019
- Approximate Start of Mobilization Process: July 29, 2019 (Per Brent, to start cleaning)
- Perform DigSafe marking in accordance with the Law
- Work Hours: Monday-Friday 7:00 AM – 5:00 PM, unless otherwise approved/directed by Owner.
    - Notice should be given to the Town a minimum of 48 hours in advance of any proposed change in work hours, so the Town has adequate time to notify residents.
    - Contractor to provide weekly project schedule updates aligned to overall construction schedule.

IV. MEETINGS

- Biweekly Progress Meetings to be scheduled at pre-construction meeting.

V. CONSTRUCTION MATTERS

- Contractor to coordinate access to hydrants with Aquarion Water Company. Contractor to provide water meter/backflow preventer. Water meter readings shall be provided to Aquarion on a monthly basis.
- Permits Required
    - Street Opening/Trenching: Contractor to obtain from Town
- Police Details: Contractor responsible for coordinating/scheduling. Police details will be direct billed to the Owner.
    - Contractor must cancel details in accordance with Hull Police Department policies and procedures. Contractor shall be responsible for Police Detail charges not cancelled in accordance with Police Detail policies.
- Traffic/pedestrian management plan to be submitted by Contractor & approved by the Engineer prior to mobilization to each work location.
- Temporary wastewater bypass plan to be submitted by Contractor and approved by the Engineer prior to mobilization to each work location.
- Maintain roads/sidewalks, utilities and other public amenities for convenience, safety and safe access by the public and abutters at all times during execution of the Work and during periods of no construction activity until Project completion.
- Public Notifications:
    - Notification to residents who will experience an interruption in sewer service is required 7 days prior to shutdown and 24-hours prior to shutdown. Notice shall be given to residents once reinstatement of service has occurred.
    - Green Mountain Pipeline Services will post No Parking signs along constricted areas of work as needed, 24 hours prior to construction in that area.

VI. PAYMENT

- Format: Contractor's Application for Payment Form C-00 62 76
- Submit 2 monthly "pencil" requisitions to Woodard & Curran by end of first week of month for review. Submit first upon mobilization.
    - Completion of Item Quantities must be verified and documented between Contractor and RPR at the end of each workday.
- Submit 6 original payment applications upon pencil requisition agreement to Woodard & Curran for processing.
    - A revised Progress Schedule shall be submitted with each Application for Payment

VII. CONTRACTOR SUBMITTALS

- To: Peter Lyons, of Woodard & Curran, via Procore.
- **Submittals required within maximum 10 calendar days of agreement:**

  1. Schedule of Submittals
  2. Listing of Equipment and Materials with lead times between placing orders and delivery, including normal allowances of time for processing and correcting Shop Drawings.
  3. Construction Schedule

- **Submittals required prior to start of work:**

  1. Construction Photographs of existing conditions submitted in .pdf or.jpg format
  2. Contractor contact information including Safety Representative
  3. Emergency Contact Information

- **Other Submittals:**

  1. Product Submittals
  2. Shop Drawings
  3. Clarifications and interpretations by Requests for Information (RFIs)
  4. Change Order requests
  5. Pencil and final Pay Requests with Progress Schedule
  6. Certified Payroll
  7. Weekly Safety Reports
  8. Construction Photographs of Pre/Final Conditions
  9. Temporary Bypass Plan
  10. Traffic Management/Pedestrian Management Plan
  11. Water Meter Readings from Aquarion Water Sources
  12. As-Built drawings

VIII. PROJECT DOCUMENTATION

- Submittals to be provided in PDF format via Procore.
- Changes in Work by a Work Change Directive or Change Order – must be approved by the Department of Public Works prior to the work being performed.
- Complaints, resident concerns – log to be kept by Woodard & Curran RPR and shared with the Contractor and Town.

IX. COORDINATION WITH RPR

- Jon Soderberg of SDE, Inc.
- RPR is Woodard & Curran's resident project representative.
- RPR to communicate with W&C daily, will discuss work completed the day prior, work planned for the day, work planned for the next 3-days, potential conflicts, potential change orders, etc.
- RPR to confirm quantities at the end of each work day for work installed.

X. OPEN QUESTIONS/COMMENTS

- Town of Hull
- Green Mountain Pipeline Services
- Woodard & Curran

PRE-CONSTRUCTION MEETING SIGN-IN SHEET
Sewer Interceptor Pipeline Renewal
CWSRF #4445 – DEP Contract No. 1
July 9, 2019 1:30 PM
Hull WWTF
1111 Nantasket Avenue
Hull, MA 02045

WOODARD &CURRAN

Sign-In:

Name	Affiliation	Email & Phone Contact Information

ATTACHMENT 1: VARIOUS KEY DEPARTMENT CONTACTS

Phil Lemnios, Town Manager, plemnios@town.hull.ma.us

Jim Dow, DPW Director, jdow@town.hull.ma.us

Chris Krahforst, Conservation Administrator, ckrahforst@town.hull.ma.us

Chris DiIorio, Planning Director, cdilorio@town.hull.ma.us

John Dunn, Police Chief, jdunn@town.hull.ma.us

Neil Reilly, Deputy Police Chief, nreilly@hullpolice.org

Chris Russo, Fire Chief, crusso@town.hull.ma.us

William Frazier, Deputy Fire Chief, wfrazier@town.hull.ma.us

David DeGennaro, Business Manager School Dept., ddegennaro@town.hull.ma.us

Panos, Tokadjian, Director of Operations, Hull Light, Ptokadjian@town.hull.ma.us

Mike, Schmitt, Assistant Director, Hull Light, mschmitt@town.hull.ma.us

Steve Olson, Director of Operations, Aquarion, SOlson@aquarionwater.com

Nelson Pio, National Grid, Nelson.Pio@nationalgrid.com

APPENDIX D: GUNROCK ATLANTIC AVE PRE-CONSTRUCTION MEETING AGENDA

COMMITMENT & INTEGRITY
DRIVE RESULTS

980 Washington Street, Suite 325N
Dedham, Massachusetts 02026
www.woodardcurran.com

T 800.446.5518
T 781.251.0200
F 781.251.0847

PRE-CONSTRUCTION MEETING
Atlantic Avenue/Gunrock Avenue Area Sewer Renewal
CWSRF #4445 – DEP Contract No. 2
July 16, 2019 3:00 PM
Hull WWTF
1111 Nantasket Avenue
Hull, MA 02045

PRE-CONSTRUCTION AGENDA

I. INTRODUCTION & PROJECT TEAM

KEY TOWN CONTACTS Various Departments (See Attachment for other Department Contacts)		
CONTACT	**EMAIL**	**PHONE**
John Struzziery, Director of Wastewater Operations/Assistant Director of Public Works	jstruzziery@town.hull.ma.us	781-925-1207
Brian Kiely, Assistant Director of Wastewater Operations	bkiely@town.hull.ma.us	781-925-1207
Carol O'Connor, Bookkeeper/Clerk	coconnor@town.hull.ma.us	781-925-1207
WWTF / COLLECTION SYSTEM OPERATIONS **Woodard & Curran, 1111 Nantasket Avenue, Hull MA 02045**		
CONTACT	**EMAIL**	**PHONE**
Aram Varjabedian, Plant Manager **Bill Boornazian,** Assistant Plant Manager	avarjabedian@woodardcurran.com wboornazian@woodardcurran.com	781-925-0906 781-613-0322
ENGINEER **Woodard & Curran, 980 Washington St., Suite 325 N, Dedham, MA 02026**		
CONTACT	**EMAIL**	**PHONE**
Rosemary Blacquier, Client Manager	rblacquier@woodardcurran.com	781-613-0644
Tim Harrison, Project Manager	tharrison@woodardcurran.com	925-627-4170
Peter Lyons, Project Engineer	plyons@woodardcurran.com	978-482-7901
Audrey Iodice, Engineer	aiodice@woodardcurran.com	781-251-0427
Tommy Chase, Resident Project Representative	chaset@peercpc.com	781 785-7860
CONTRACTOR **Aqua Line Utility Inc., 1283 Washington Street** **Weymouth, MA 02189**		
CONTACT	**EMAIL**	**PHONE**
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION **1 Winter Street, Boston, MA 02108** **Lilla Dick** **Office: 617-556-1083**		

II. PROJECT LOGISTICS

Work Description:

- Project is funded by the Clean Water State Revolving Fund (CWSRF #4445, Contract No. 2). Therefore SRF paperwork is required (drawdown requests, change order forms, DEP Approvals, D/M/WBE requirements, AIS Requirements, Diesel Retrofit Program, Project Display Signs etc.)
- The project will rehabilitate the Town's deteriorated small-diameter gravity and pressure sewer system located along the Atlantic Avenue area between Nantasket Avenue and Summit Avenue. The sewer will be rehabilitated with cured-in-place mainline and lateral pipe (CIPP) lining, cementitious and epoxy manhole lining as well as open cut replacement.
- The primary objective is to mitigate structural defects, remove infiltration, and increase the lifespan of the sewer system. The project will also rehabilitate all of the sewer infrastructure beneath Atlantic Avenue, prior to paving scheduled in 2021. The work will be substantially complete by December 29, 2019.
- The Work includes all labor, materials, tools, equipment and services required for construction, testing, and commissioning of the Work in accordance with the Contract Documents. The Work includes the following principal features:
    - Furnishing and installing temporary sewer main bypass systems to provide for the continuous flow of wastewater during construction.
        a. Bypass of Pump Station 1, Pump Station 3, Pump Station 4, Lift Station A
        b. Sufficiently sized to convey existing flows from access structure to the next and operate/respond to any repair of the system 24/7.
    - Installation of 7,100 LF of CIPP gravity mainline
    - Installation of approximately 2,250 LF of CIPP sewer force main on three separate force mains
    - Installation of approximately 2,750 linear feet of sewer lateral cured-in- place pipe from sewer main to limit of right-of-way.
    - Open cut replacement of approximately 60 sewer service connections at the mainline to aid installation of sewer lateral cured-in-place pipe (as determined by the installer of the sewer lateral cured-in-place pipe)
    - Open cut and replacement of approximately 1,100 linear feet of sewer lines.
    - Installation of 350 linear feet of service lateral pipe.
    - Installation of approximately 7 four-foot diameter precast concrete sewer manholes.
    - Cleaning, inspection, and testing and sealing of approximately 1,800 linear feet of 6-inch sewer lines.
    - Cementitious lining of approximately 400 vertical feet of sewer manholes.
    - Epoxy lining of approximately 20 vertical feet of sewer manholes.
    - Traffic and Pedestrian Management

Work Locations:

- Atlantic Avenue
- School Street
- Meade Avenue
- South Avenue
- Richards Road

- Stony Beach Road
- Damon Park Road
- Gunrock Avenue
- Reef Point
- Summit Avenue

Work Restrictions:

- Contractor to coordinate installation of work with ongoing gas, water, and paving construction. Where conflict may exist, gas, water, and paving construction may take precedence over this project work.
- Traffic control and pedestrian management plans to be submitted and approved by Engineer. 2-way traffic to be kept open to the greatest extent possible

III. PROJECT SCHEDULE

Key Date	Duration	Date
Notice to Proceed	-	Monday, July 22, 2019
Substantial Completion	160	Sunday, December 29, 2019
Post Substantial Completion Punch List	190	Tuesday, January 28, 2020
Final Payment (Warranty Inspection and Final Pavement)	351	Monday, December 14, 2020

- Notice to Proceed/ Contract Start Date: July 22, 2019
- Approximate Start of Mobilization Process: July 29, 2019
- Perform DigSafe marking in accordance with the Law
- Work Hours: Monday-Friday 7:00 AM – 3:00 PM, unless otherwise approved/directed by Owner.
  - Notice should be given to the Town a minimum of 48 hours in advance of any proposed change in work hours, so the Town has adequate time to notify residents.
  - Contractor to provide weekly project schedule updates aligned to overall construction schedule.

IV. MEETINGS

- Biweekly Progress Meetings to be scheduled at pre-construction meeting.
- Preconstruction meeting with Town Dept Heads scheduled for Wednesday, July 31 at 10:00AM at Town Hall. Proposed schedule:
- 10:00AM – 11:00AM: Aqua Line Discussion
- 11:00AM – 12:00PM: Green Mountain
- 12:00PM – 12:30PM: SRF Discussion

V. CONSTRUCTION MATTERS

- Contractor to coordinate access to hydrants with Aquarion Water Company. Contractor to provide water meter/backflow preventer. Water meter readings shall be provided to Aquarion on a monthly basis.
- Permits Required
    - Street Opening/Trenching: Contractor to obtain from Town
- Police Details: Contractor responsible for coordinating/scheduling. Police details will be direct billed to the Owner.
    - Contractor must cancel details in accordance with Hull Police Department policies and procedures. Contractor shall be responsible for Police Detail charges not cancelled in accordance with Police Detail policies.
- Traffic/pedestrian management plan to be submitted by Contractor & approved by the Engineer prior to mobilization to each work location.
- Temporary wastewater bypass plan to be submitted by Contractor and approved by the Engineer prior to mobilization to each work location.
- Maintain roads/sidewalks, utilities and other public amenities for convenience, safety and safe access by the public and abutters at all times during execution of the Work and during periods of no construction activity until Project completion.
- Public Notifications:
    - Notification to residents who will experience an interruption in sewer service is required 7 days prior to shutdown and 24-hours prior to shutdown. Notice shall be given to residents once reinstatement of service has occurred.
    - Aqua Line Utility will post No Parking signs along constricted areas of work as needed, 24 hours prior to construction in that area.

VI. PAYMENT

- Format: Contractor's Application for Payment Form C-00 62 76
- Submit 2 monthly "pencil" requisitions to Woodard & Curran by end of first week of month for review. Submit first upon mobilization.
    - Completion of Item Quantities must be verified and documented between Contractor and RPR at the end of each workday.
- Submit 6 original payment applications upon pencil requisition agreement to Woodard & Curran for processing.
    - A revised Progress Schedule shall be submitted with each Application for Payment

VII. CONTRACTOR SUBMITTALS

- To: Peter Lyons, of Woodard & Curran, via Procore.
- **Submittals required within maximum 10 calendar days of agreement:**

  1. Schedule of Submittals
  2. Listing of Equipment and Materials with lead times between placing orders and delivery, including normal allowances of time for processing and correcting Shop Drawings.
  3. Construction Schedule

- **Submittals required prior to start of work:**

  1. Construction Photographs of existing conditions submitted in .pdf or.jpg format
  2. Contractor contact information including Safety Representative
  3. Emergency Contact Information

- **Other Submittals:**

  1. Product Submittals
  2. Shop Drawings
  3. Clarifications and interpretations by Requests for Information (RFIs)
  4. Change Order requests
  5. Pencil and final Pay Requests with Progress Schedule
  6. Certified Payroll
  7. Weekly Safety Reports
  8. Construction Photographs of Pre/Final Conditions
  9. Temporary Bypass Plan
  10. Traffic Management/Pedestrian Management Plan
  11. Water Meter Readings from Aquarion Water Sources
  12. As-Built drawings

VIII. PROJECT DOCUMENTATION

- Submittals to be provided in PDF format via Procore.
- Changes in Work by a Work Change Directive or Change Order – must be approved by the Department of Public Works prior to the work being performed.
- Complaints, resident concerns – log to be kept by Woodard & Curran RPR and shared with the Contractor and Town.

IX. COORDINATION WITH RPR

- Tommy Chase of PEER Consultants
- RPR is Woodard & Curran's resident project representative.
- RPR to communicate with W&C daily, will discuss work completed the day prior, work planned for the day, work planned for the next 3-days, potential conflicts, potential change orders, etc.
- RPR to confirm quantities at the end of each workday for work installed.

X. OPEN QUESTIONS/COMMENTS

- Town of Hull
- Aqua Line Utility Inc.
- Woodard & Curran

PRE-CONSTRUCTION MEETING SIGN-IN SHEET
Atlantic Avenue/Gunrock Avenue Area Sewer Renewal
CWSRF #4445 – DEP Contract No. 2
July 16, 2019 3:00 PM
Hull WWTF
1111 Nantasket Avenue
Hull, MA 02045

WOODARD &CURRAN

Sign-In:

Name	Affiliation	Email & Phone Contact Information

ATTACHMENT 1: VARIOUS KEY DEPARTMENT CONTACTS

Phil Lemnios, Town Manager, plemnios@town.hull.ma.us

Jim Dow, DPW Director, jdow@town.hull.ma.us

Chris Krahforst, Conservation Administrator, ckrahforst@town.hull.ma.us

Chris DiIorio, Planning Director, cdiIorio@town.hull.ma.us

John Dunn, Police Chief, jdunn@town.hull.ma.us

Neil Reilly, Deputy Police Chief, nreilly@hullpolice.org

Chris Russo, Fire Chief, crusso@town.hull.ma.us

William Frazier, Deputy Fire Chief, wfrazier@town.hull.ma.us

David DeGennaro, Business Manager School Dept., ddegennaro@town.hull.ma.us

Panos, Tokadjian, Director of Operations, Hull Light, Ptokadjian@town.hull.ma.us

Mike, Schmitt, Assistant Director, Hull Light, mschmitt@town.hull.ma.us

Steve Olson, Director of Operations, Aquarion, SOlson@aquarionwater.com

Nelson Pio, National Grid, Nelson.Pio@nationalgrid.com

APPENDIX E: PUMP STATION 4 FORCE MAIN IMPROVEMENTS

JOB QUOTE

DATE: June 29, 2019

Proposal Prepared For:
Brian R. Kiely, P.E.
Assistant Director of Wastewater Operations
1111 Nantasket Ave
Hull Ma 02045

Project Location: #111 Nantasket Ave Hull Wastewater Treatment Plant

Re : PS 4 Force Main Improvements
Scope of work to include:

- Aqualine Utility Inc. will install (1) new dog house manhole per drawings
- We will core into the existing gravity sewer manhole
- We will install the 2'' Standpipe Drain line per plans with all fittings
- Install 8'' FM piping per drawings with all fittings per plans
- Install 6" bypass standpipe plus fittings per plans
- Install 12" of gravel and 4" of bituminous asphalt pavement within trench limits

#1283 Washington st Weymouth Ma. 02189
Phone: 508 690-2009 Office 781-760-6297 Cell Fax: 508-456-1305
Email: aqualineutility@comcast.net Office
Bill.Leonard@aqualineutility.com

Exclusions:

- Engineering and layout
- Additional insurance requirements beyond those currently maintained.
- Price is based on Mobilization & Demobilizations
- Milling and Paving of any kind
- Permanent paving of any kind
- Rock-Ledge-Boulders
- Contaminated soils of any kind
- Concrete sidewalks or ramps of any kind
- Loam & Seed
- Concrete work

Terms & Conditions:

- Balance Due 30 days from the installation on an as completed bases with no retainage held.
- Aqua Line Utility, Inc shall not be responsible for the condition of the curbing after the initial installation.
- Any change to the specific type, scope, or quantity of the work upon which this proposal is bases will be subject to a revised proposal and any changes made after mobilization will be handled on a time and material basis.
- Prior to mobilization, entire work area to be accessible and free of any obstructions. Delays caused on site for reasons beyond our control will be billed on an hourly basis.
- This proposal is valid for 30 days.
- Aqua Line Utility, Inc reserves the right to review this proposal and existing site conditions prior to any contractual obligation and the right to withdraw this proposal at our convenience

#1283 Washington st Weymouth Ma. 02189
Phone: 508 690-2009 Office 781-760-6297 Cell Fax: 508-456-1305
Email: aqualineutility@comcast.net Office
Bill.Leonard@aqualineutility.com

NOTE:

Contractor may withdraw this proposal if not accepted within 15 days.

Authorized: Aqua Line Utility Inc.
By: William C. Leonard Jr
President

ACCEPTANCE OF PROPOSAL: $29,903.95

The above process, specifications, and conditions are satisfactory and are hereby accepted. Aqua Line Utility Inc. is authorized to perform work as specified above.

DATE: June 29, **2019** **Authorized Signature:** _____

Printed Name: John Struzziery, P.E.

Title: Director of Wastewater Operations

#1283 Washington st Weymouth Ma. 02189
Phone: 508 690-2009 Office 781-760-6297 Cell Fax: 508-456-1305
Email: aqualineutility@comcast.net Office
Bill.Leonard@aqualineutility.com

APPENDIX F: HULL GAP GRANT

Final Report for Gap II Grant

Energy Efficiency Upgrades for the Town of Hull WWTP

2018-2019 Energy Grant Report

June 15, 2019

Woodard and Curran

I. PROJECT TITLE – Energy Efficiency Upgrades for the Town of Hull Waste Water Treatment Plant

II. PROJECT MANAGERS

- **Michael Pace – Horizon Point of Contact mpace@hs-e.com 781-690-5671**
- **Frank Cavaleri – Woodard and Curran Point of Contact fcavaleri@woodardcurran.com 617-590-4571**
- **John Struzziery – Director of Wastewater Operations/Assistant Director of Public Works jstruzziery@town.hull.ma.us 781-925-1207**

III. PROJECT SUMMARY

The Town of Hull made energy efficiency upgrades to its aeration and odor control systems, as well as installed a heat pump block heater. The aeration upgrades included installing an actuator on the aerated underground sludge tank airline, as well as an air flow meter, used to automatically adjust air flow rates to the sludge tank, as the tank levels vary, directly from SCADA. A Variable Frequency Drive (VFD), with a bypass, was installed at the odor control fan, also operable from SCADA. The VFD allows the air flow to the odor scrubber to be lowered seasonally, when certain unit processes are taken offline. Lastly, the heat pump block heater was installed on the existing 750 kW Kohler diesel emergency generator.

Section A.

Before and After Photos (Note there are no before photos for the block heater/VFD as it is just a picture of an empty space)

Before - Aeration Piping

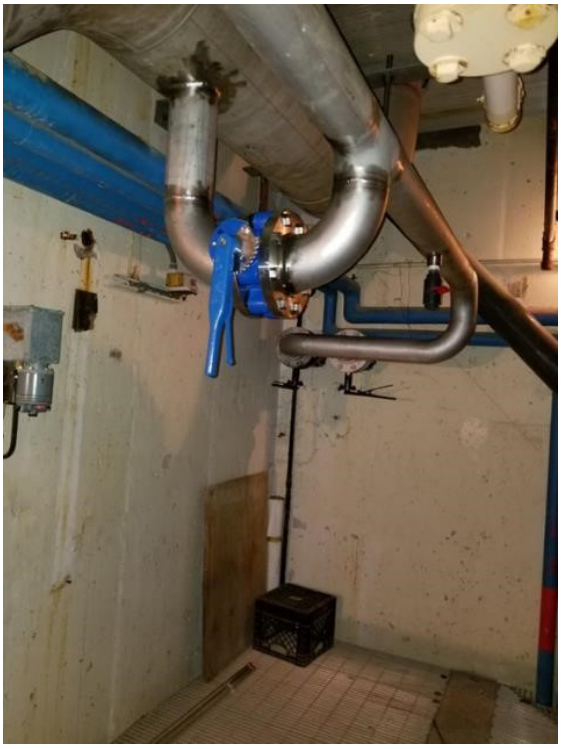
14-inch airline to aeration tanks

4-inch airline to sludge holding tank

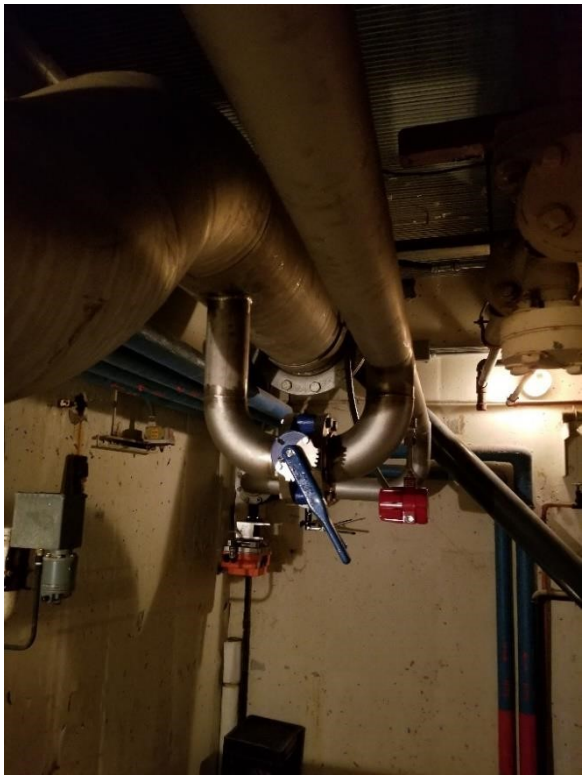
Odor Control Exhaust Fan VFD - (none)

Heat Pump Block Heater - (none)

After - Aeration piping, valves, actuator and flow meter



New 4-inch connection to 14-inch main aeration piping and valve



New actuator (orange) and flow meter (red)

Odor Control Exhaust Fan VFD

1.4kW Heat Pump Block Heater

Section B.

Start-up Information for Installed Equipment

The Aeration Actuator, Odor Control VFD and the Heat Pump Block Heater were all installed to specifications, tested and are operating as designed. A summary of the anticipated electrical energy and cost savings is provided below.

GAP II GRANT DATA TABLE

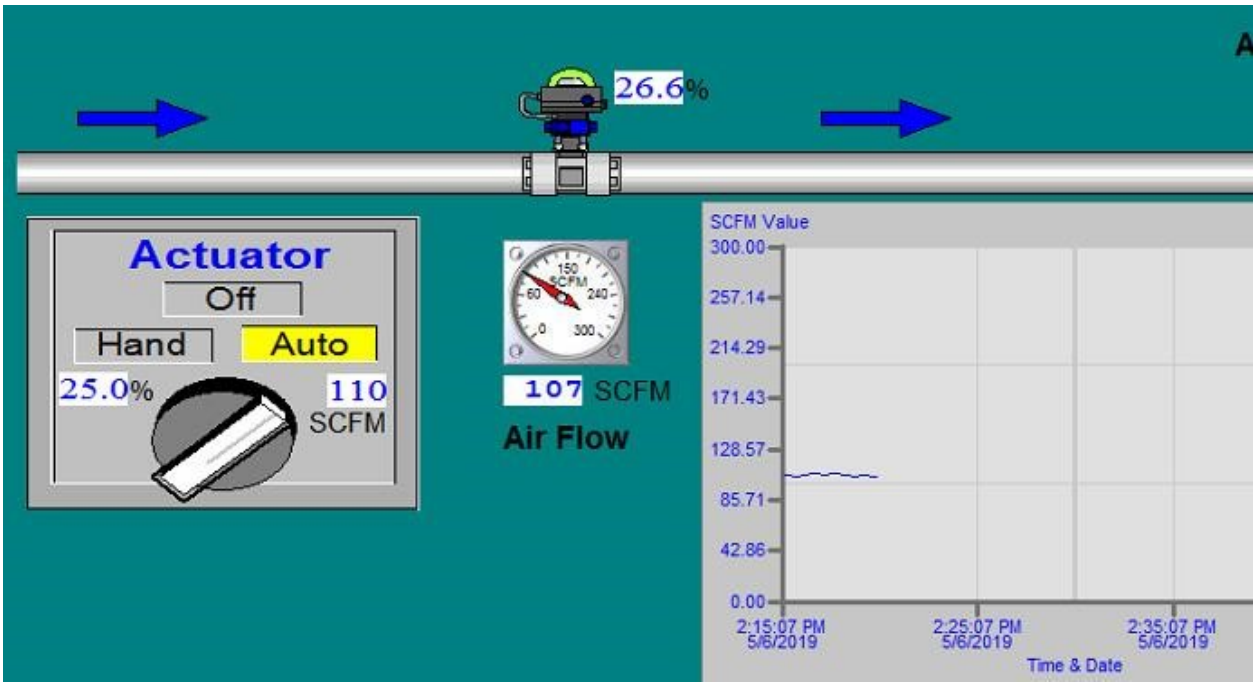
			$ 0.1500	per kWhr			
Project Name (description)	**Estimated Project Completion Date (month / year)**	**Projected Annual Electricity Savings or Generation (kWh)**	**Projected Annual Cost Savings ($)**	**Total Project Cost ($) [1]**	**Projected Years for payback**	**Municipal / District Cost Share Contribution ($) Minimum 10%**	**Gap Grant Funding Requested ($)**
Aeration Blower Optimization	*May 2019*	*91,116*	*$ 13,667*	*$ 28,165*	*2.1*	*$ 2,816*	*$ 25,348*
Odor Control Fan VFD Installation	*May 2019*	*65,350*	*$ 9,802*	*$ 13,272*	*1.4*	*$ 1,327*	*$ 11,945*
Generator Heating Block	*May 2019*	*17,938*	*$ 2,691*	*$ 25,139*	*9.3*	*$ 2,514*	*$ 22,625*
N/A		***174,404***	***$ 26,161***	***$ 66,576***	*2.5*	***$ 6,658***	***$ 59,918***

First, the 1.4kW Heat Pump Block Heater, was installed and is supplemented by the existing 4.0kW electric heater. The new heater did not replace the existing 4000W electric heater. The larger and older heater is still be in place in case the 1.4kW block heater should ever fail. The 1.4kW Block Heater, costing $25,139, saves and estimated 17,938 kWh per year. The Heat Pump unit provides an estimated savings of $2,691 per year, giving a simple pay back over 9.3 years.

The new VFD was installed on the odor control system and provides operational adjustment of the scrubber air flow based on actual process and treatment needs. The VFD, costing $13,272, saves and estimated 65,350 kWh per year. The VFD provides an estimated savings of $9,802 per year, giving a simple pay back over 1.4 years.

The upgrades to the aeration system included an actuator being installed and a connection from the 14" main aeration line to the 4" sludge line. This gives operators the ability to use air from the bigger aeration blower, which is more efficient than the smaller 5 and 15 Hp blowers. The new piping and controls allow the 15 HP blower to be shut off for approximately 270 days a year, and just run one of the 5 HP blowers directly to the grit, only when the sludge tank is online. The cost of these specific upgrades was $28,165, which include a Sierra 780S flow meter, piping, electric modulating actuator and SCADA system programming. In return the plant saves 91,116 kWh per year. These savings translate to $13,667 a year, giving Hull a 1.4-year simple pay back.

SCADA screen shots for Aeration System



IV. FINAL PROJECT COSTS (Receipts)

See attached

V. PROJECT FACT SHEET

TOWN OF HULL
BOARD OF SEWER COMMISSIONERS
WASTEWATER TREATMENT PLANT
1111 NANTASKET AVE.
HULL, MA 02045
781-925-1207

The Town of Hull implemented three energy efficient upgrades to the Wastewater Treatment Plant, including - Aeration system modifications, odor control optimization and a heat pump generator block heater – bringing real savings to the plant

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In spring of 2018, The Baker-Polito Administration awarded $4 million for energy efficiency and renewable energy upgrades at water treatment facilities, through the Gap Funding Grant Program. The program provides the final funding towns need to install energy efficient upgrades, which will cut greenhouse gases, increase reliability and lower the cost of operation.

The Town of Hull was awarded $59,918 from the state through the Gap II Energy Grant program. This grant will allow the town to complete the installation of energy efficiency upgrades to the plant, including a new heat pump generator block heater, VFD for odor control optimization and modifications to the aeration system.

Town of Hull: Wastewater Treatment Plant
Project: Aeration system modification, Odor Control Optimization and Heat Pump Generator Block Heater

Total Project Costs: $66,575.90
Gap II Grant Award: $59,918.00

Town of Hull Cost: $6,657.59 (10% of total project cost)

Annual Savings: $26,161

Annual Electric Savings: 174,404 kWh

Block Pump Generator Block Heater

Aeration piping – 4" to 14" piping/valve

Odor Control Exhaust Fan VFD

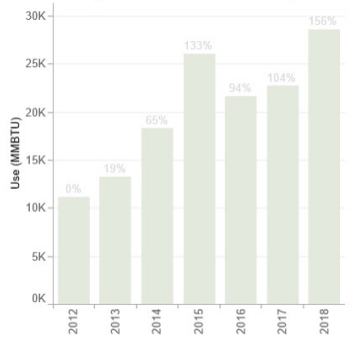
Any questions please contact John Struzziery, Director of Wastewater Operations, at 781-925-1207 or by email at jstruzziery@town.hull.ma

VI. MASSENERGYINSIGHT ENERGY SUMMARY REPORT

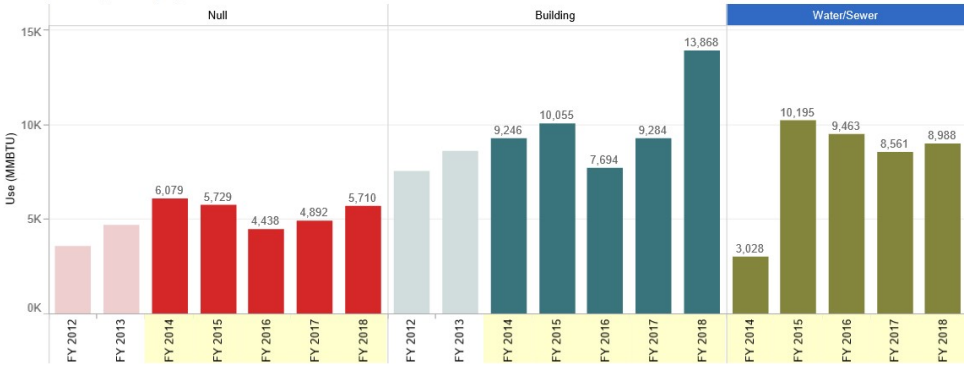
From Date	To Date	Use (kWh)	Use - Demand (kW)	Cost - Utility	Cost - Competitive supplier	Price – Competitive Supply	Read Type	Days
2019-01-01	2019-03-31	537930		85,069.00				365
2018-01-01	2018-12-31	1463760		231,471.00				365
2017-01-01	2017-12-31	1252200		198,043.00				365
2016-01-01	2016-12-31	1275960		201,799.47				365
2015-01-01	2015-12-31	1441320		212,685.47				365
2014-01-01	2014-12-31	1519068		229,621.81				365

Baseline Dashboard

Overall Use (with % Difference from Baseline Year)



Use by Facility Category



Drill down by Facility Category (showing Use (MMBTU))

Hover over Facility Category and Subcategory and click the plus or minus signs to expand and collapse the table.

Facility Categ..	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Null	3,592	4,680	6,079	5,729	4,438	4,892	5,710
Building	7,555	8,580	9,246	10,055	7,694	9,284	13,868
Water/Sewer			3,028	10,195	9,463	8,561	8,988

Drill down by Department (showing Use (MMBTU))

Hover over Department, Complex, etc. and click the plus or minus signs to expand and collapse the table.

Department	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Null	11,146	13,260	18,353	25,980	21,596	22,737	28,566

ESCO Report - Annual Data

							FY 2018			
							Electric (kWh)		Gas (therms)	
Facility	Account #	Provider	Fuel (units)	Department	Facility Subcategory	Year Built	Use	Cost - Total	Use	Cost - Total
Null	5301417500	National Grid	Gas (therms)	Null	Null	Null			1,061	$1,717
	5301419030	National Grid	Gas (therms)	Null	Null	Null			2,381	$3,677
	5301422180	National Grid	Gas (therms)	Null	Null	Null			342	$937
	5301815880	National Grid	Gas (therms)	Null	Null	Null			145	$665
	5301822271	National Grid	Gas (therms)	Null	Null	Null			31,902	$15,860
	5302017710	National Grid	Gas (therms)	Null	Null	Null			237	$767
	5302215220	National Grid	Gas (therms)	Null	Null	Null			3,388	$5,046
	5302216120	National Grid	Gas (therms)	Null	Null	Null			1,885	$2,802
	5302423470	National Grid	Gas (therms)	Null	Null	Null			442	$1,021
	5302621100	National Grid	Gas (therms)	Null	Null	Null			285	$854
	5303012060	National Grid	Gas (therms)	Null	Null	Null			9,376	$12,434
	5303014380	National Grid	Gas (therms)	Null	Null	Null			364	$940
	5303210150	National Grid	Gas (therms)	Null	Null	Null			3,195	$4,534
	5303210180	National Grid	Gas (therms)	Null	Null	Null			326	$900
	5303223080	National Grid	Gas (therms)	Null	Null	Null			1,775	$2,707
Hull HS	5301422241	National Grid	Gas (therms)	Null	School	Null			87,505	$39,778
Hull WPCF	5327	Hull Light	Electric (kWh)	Null	Wastewater Treatment Plant	1978	1,381,920	$218,551		
	WPCF	Hull Light	Electric (kWh)	Null	Wastewater Treatment Plant	1978	1,252,200	$198,043		
Lillian M Jacobs ES	5301423630	National Grid	Gas (therms)	Null	School	Null			51,179	$25,247

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